

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) Apparatus for closure of a physical anomaly having a lumen, the apparatus comprising:

a closure body,

said closure body made of a shape memory polymer (SMP),

said shape memory polymer (SMP) being formed into a primary shape, compressed into a reduced secondary stable shape, then controllably actuated so that it recovers its primary shape,

wherein said shape memory polymer (SMP) provides said closure body ~~has a~~ with said reduced secondary stable shape configured for positioning said closure body within said lumen, and

a said primary shape configured to close said anomaly.

2. (Cancelled)

3. (Cancelled)

4. (Currently Amended) The apparatus of claim 1 wherein said ~~closure body~~ shape memory polymer (SMP) comprises a shape memory polymer foam having at least one hard segment and one soft segment wherein said hard segment is formed at a temperature above T_{trans} and said soft segment is formed at a temperature below T_{trans} .

5. (Original) The apparatus of claim 1 wherein said closure body comprises a shape memory material having a substantially spherical shape.

6. (Original) The apparatus of claim 1 wherein said closure body comprises a shape memory material having a substantially barbell shape.

7. (Original) The apparatus of claim 1 wherein said closure body comprises a shape memory material having a substantially band shape.

8. (Original) The apparatus of claim 1 wherein said closure body comprises a shape memory material having a substantially double truncated cone shape.

9. (Original) The apparatus of claim 1 wherein said closure body comprises a shape memory material having a substantially flowing fluid shape.

10. (Original) The apparatus of claim 1 wherein said closure body is biodegradable.

11. (Original) The apparatus of claim 1 further comprising a delivery catheter.

12. (Original) The apparatus of claim 1 further comprising a plunger actuator.

13. (Original) The apparatus of claim 1 further comprising a backbleed tube.

14. (Original) The apparatus of claim 1 further comprising a plunger actuator.

15. (Original) The apparatus of claim 1 further comprising a restraint tube.

16. (Original) The apparatus of claim 1 wherein the physical anomaly is chosen from the group consisting of arteriotomy puncture sites, septal defects, patent ductus, and combinations thereof.

17. (Original) The apparatus of claim 1 further comprising an actuator configured to transition the closure body from the reduced secondary shape to the primary shape.

18. (Original) The apparatus of claim 17, wherein the actuator is chosen from the group consisting of external sheaths, removable sheaths, constraint sheaths, light, coherent light, heat, externally applied energy, plungers, RF, induction, stress, and combinations thereof.

19. (Currently Amended) A method of closing a physical anomaly having a passage, the method comprising:

providing a closure body made of a shape memory polymer (SMP), said shape memory polymer (SMP) capable of being formed into a primary shape, compressed into a reduced secondary stable shape, then controllably actuated so that it recovers its primary shape,

positioning a said closure body made of said shape memory polymer (SMP) in the passage of the physical anomaly when said closure body is disposed in a said reduced secondary stable shape, and

transitioning said closure body made of a shape memory polymer (SMP) to ~~a larger~~ said primary shape within the passage, thereby closing said anomaly.

20. (Original) The method of claim 19 wherein transitioning the closure body further comprises transitioning the closure body with an actuator.

21. (Original) The method of claim 20, wherein transitioning the closure body, with an actuator further comprises transitioning the closure body with an actuator chosen from the group consisting of external sheaths, removable sheaths, constraint sheaths, light, coherent light, heat, externally applied energy, plungers, RF, induction, stress, and combinations thereof.

22. (Cancelled)

23. (Currently Amended) The method of claim 19 wherein said step of positioning a closure body further comprises positioning a shape memory polymer foam body having at least one hard segment and one soft segment wherein said hard segment is formed at a temperature above T_{trans} and said soft segment is formed at a temperature below T_{trans} .

24. (Original) The method of claim 19 wherein positioning a closure body in the passage of the physical anomaly when said closure body is disposed in a

reduced secondary shape further comprises positioning the closure body with a delivery catheter.

25. (Original) The method of claim 19 wherein transitioning said closure body further comprises transitioning the closure body with a plunger actuator.

26. (Original) The method of claim 19 wherein transitioning said closure body comprises transitioning the closure body with a polymer body with a generally flowing fluid shape.

27. (Original) The method of claim 19 wherein positioning a closure body in the passage of the physical anomaly when said closure body is disposed in a reduced secondary shape further comprises positioning the closure body with a polymer body with a spherical shape.

28. (Original) The method of claim 19 wherein positioning a closure body in the passage of the physical anomaly when said closure body is disposed in a reduced secondary shape further comprises positioning the closure body with a polymer body with a generally barbell shape.

29. (Original) The method of claim 19 wherein positioning a closure body in the passage of the physical anomaly when said closure body is disposed in a reduced secondary shape further comprises positioning the closure body with a polymer body with a generally band shape.

30. (Original) The method of claim 19 wherein positioning a polymer body in the passage of the physical anomaly when said polymer body is disposed in a reduced secondary shape further comprises positioning the closure body with a polymer body with a generally double truncated cone shape.

31. (Original) The method of claim 19 wherein the physical anomaly is chosen from the group consisting of arteriotomy puncture sites, septal defects, patent ductus, and combinations thereof.

32. (Currently Amended) A system for the closure of a physical anomaly having a passage, the system comprising:

a closure body for closing the anomaly,

said closure body made of a shape memory polymer (SMP),

said shape memory polymer (SMP) being formed into a primary shape, compressed into a reduced secondary stable shape, then controllably actuated so that it recovers its primary shape,

~~said closure body having a~~ shape memory polymer (SMP) reduced secondary stable shape configured for positioning the said closure body in the passage of the physical anomaly, ~~and a larger primary shape;~~

means for positioning said closure body in the passage of the physical anomaly when said closure body is in said reduced secondary stable shape; and

means for transitioning said closure body to said ~~larger~~ primary shape for closing said anomaly.

33. (Cancelled)

34. (Currently Amended) The system for the closure of a physical anomaly of claim 32 wherein said closure body comprises a shape memory polymer foam body with a secondary shape for being positioned in the passage of the physical anomaly and a larger primary shape for closing said anomaly, said shape memory polymer foam having at least one hard segment and one soft segment wherein said hard segment is formed at a temperature above T_{trans} and said soft segment is formed at a temperature below T_{trans} .

35. (Original) The system of claim 32 wherein the physical anomaly is chosen from the group consisting of arteriotomy puncture sites, septal defects, patent ductus, and combinations thereof.